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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/602,916

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Patrick Knebel

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EXAMINER

MEONSKE, TONIA L

ART UNIT

PAPER NUMBER

2181

DATE MAILED: 07/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/602,916	Applicant(s) KNEBEL ET AL.	
	Examiner Tonia L. Meonske	Art Unit 2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-17 is/are allowed.
- 6) ☒ Claim(s) 1, 3 and 4 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Fritz Fleming
FRITZ FLEMING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100
7/10/2006

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Terminal Disclaimer

1. The terminal disclaimer filed on April 25, 2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Patent 6,618,801 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Panwar et al., US Patent 5,875,316 (herein referred to as Panwar), in view of Hull et al., US Patent 5,922,065 (herein referred to as Hull).

4. Referring to claim 1, Panwar has taught a method for implementing two types of architectures on a chip, comprising:

- a. receiving an instruction from a fetch engine (Panwar, column 5, lines 59-60, figure 2, reference number 202),
- b. determining whether the instruction is a macroinstruction or a microinstruction (Panwar, column 7, line 61-column 8 line 2, figures 3 and 6),
- c. if the instruction is a macroinstruction, sending the macroinstruction to an emulation engine (Panwar, column 7, line 67-column 8 line 2),

- d. decomposing the macroinstruction into one or more microinstructions (Panwar, column 10, lines 32-34), .
 - e. formatting, by a bundler, the microinstructions into bundles as preferred by the native microarchitecture (Panwar, column 10, lines 34-36),
 - f. dispatching a bundle in parallel to an execution engine via a multiplexer (Panwar, column 10, lines 36-38, Figure 3, 306),
 - g. if the instruction is microinstruction, dispatching the microinstruction to the execution engine via the multiplexer (Panwar, column 7, lines 65-67 and column 8, lines 15-17, Figure 3, element 306).
 - h. dispatching additional information to the execution engine (Panwar, column 10, line 55-column 11, line 10).
 - i. selecting either the microinstruction from the fetch engine or the bundle from the emulation engine, by using the multiplexer (Panwar, column 7, line 61-column 8, line 2), and
 - j. dispatching the selected instruction to the execution engine (Panwar, column 8, lines 15-17; column 10, lines 34-37)
5. Panwar has not specifically taught dispatching additional information to the execution engine, wherein the additional information is contained in bits of the bundle otherwise not required for emulation of the macroinstruction. However, Hull has taught dispatching additional information to the execution engine, wherein the additional information is contained in bits of an instruction bundle otherwise not required for execution of the instruction bundle (Hull, abstract, Figures 3 and 4, column 2, lines 21-29; column 4, lines 20-32, Hull issues a template field with a

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bundle of instructions. The template field is not required for execution of the instructions. The template field maps the instructions in the slots to execution unit types in order to increase processor efficiency during execution time (Hull, column 2, lines 5-30).). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the method of Panwar, include dispatching additional information (i.e. the templates of Hull) to the execution engine, wherein the additional information is contained in bits of the bundle otherwise not required for emulation of the macroinstruction, as taught by Hull, for the desirable purpose of increasing processor efficiency (Hull, column 2, lines 5-30).

6. Referring to claim 3, Panwar in combination with Hull have taught the method according to claim 1, as described above, and wherein the additional information includes control information from the emulation front end (Panwar, column 10, lines 57-60) that is sent using a memory, floating-point, integer ("MFI") template, wherein the MFI template specifies that the bundle includes a memory instruction in a first syllable, a floating point instruction in a second syllable, and an integer instruction in a third syllable (Hull, figures 2-4, template 6 of figure 4).

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Panwar et al., US Patent 5,875,316 (herein referred to as Panwar), in view of Hull et al., US Patent 5,922,065 (herein referred to as Hull), as applied to claim 1 above, and further in view of Nemirovsky et al., US Patent 6,105,125 (herein referred to as Nemirovsky), and Davidson et al., US Patent 5,613,117 (herein referred to as Davidson).

8. Referring to claim 4, Panwar and Hull have taught the method according to claim 1, as described above. They have not specifically taught wherein the additional information includes an immediate from an emulation front end that is sent by using a memory, long-immediate,

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integer ("MLI") template that is interpreted by the execution engine differently, depending upon whether the execution engine is operating in native mode or emulation mode. However, Nemirovsky has taught dispatching an immediate, which is merely a part of the claimed additional information, from the emulation front end (Nemirovsky, column 3, lines 48-52). It would be obvious to one of ordinary skill in the art at the time of the invention to include an immediate value to the execution engine so that the execution unit would be able to correctly execute the instruction. If an instruction had an immediate value associated with it, that value would have been required for the proper result of the instruction. Allowing the immediate to have its own syllable, or template, would have made it easier for the decoder to recognize the immediate value and would have reduced the time required for decoding. Therefore, one of ordinary skill in the art at the time of the invention would have included this extra information in an immediate template to reduce decoding time and to get the proper results of instruction execution.

9. The combination of Panwar, Hull and Nemirovsky have not specifically taught wherein the immediate template is sent by using an MLI template that is interpreted by the execution engine differently, depending upon whether the execution engine is operating in a native mode or an emulation mode. Davidson has taught an immediate template, sent by using an MLI template, that is interpreted by the execution engine differently, depending upon what mode the execution engine is operating in Davidson, column 26, lines 14-28; The different interpreters interpret the same template in different ways, with each pass of the template using a different mode.). By allowing the same template to have been interpreted in different ways for different modes, the system would have understood several different languages, one for each pass. It would have been

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obvious to one of ordinary skill in the art at the time of the invention to have the same template interpreted by two different modes, one being a native mode and one being an emulation mode, such that the template would have been interpreted in different ways. Emulation mode was used so that one processor could understand data or instructions in a different way than its normal execution so that the processor could execute a different type of architecture than originally designed. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to interpret the template differently for different modes, so that the system could have used and emulated several different computer languages, and therefore take advantage of previously written code that existed in numerous different languages.

Response to Arguments

10. Applicant's arguments filed April 25, 2006, with respect to claims 5, 7, 8, 9, 10 and 11 have been fully considered and are persuasive. The rejections under 35 USC 103 have been withdrawn.

11. On pages 8 and 9, Applicant argues in essence:

"Panwar only teaches selecting the non-complex instructions and complex instructions from the "main bundle 203" (i.e., prior to expansion of the complex instruction) "in the multiplexer 304", not selecting either a microinstruction from the fetch engine or a bundle from an emulation engine (i.e., after emulation of a microinstruction)."

However, it appears that Applicant is relying on multiplexer 304 to argue around the Panwar reference with respect to the newly claimed multiplexer. However, in Figure 3, multiplexer 306, not multiplexer 304, is equivalent to the claimed multiplexer. Claim 1 requires "dispatching a bundle in parallel to an execution engine via a multiplexer, and ... selecting either the microinstruction from the fetch engine or the bundle from the

emulation engine, by using the multiplexer”. Panwar has taught “dispatching a bundle in parallel to an execution engine via a multiplexer (Figure 3, element 306, column 7, line 60-column 8, line 18), and ... selecting either the microinstruction from the fetch engine or the bundle from the emulation engine, by using the multiplexer (Figure 3, element 306, column 7, line 60-column 8, line 18)”. Therefore this argument is moot.

12. On pages 9 and 10, Applicant argues in essence:

“The Office Action must provide motivation to include an intermediate instruction taught by Nemirovsky before being able to combine Nemirovsky with Panwar and Hull.”

However, it would have been completely obvious to one of ordinary skill in the art at the time the invention was made to use an immediate operand in an instruction. Microsoft’s Computer dictionary defines “immediate operand” as a data value, used in the execution of an assembly language instruction, that is contained in the instruction itself rather than pointed to by an address in the instruction. Immediate operands are desirable to use when an instruction operates on a constant value. Nemirovsky has taught dispatching an immediate, which is merely a part of the claimed additional information, from the emulation front end (Nemirovsky, column 3, lines 48-52). It would be obvious to one of ordinary skill in the art at the time of the invention to include an immediate value to the execution engine so that the execution unit would be able to correctly execute an instruction containing an immediate value. If an instruction had an immediate value associated with it, that value would have been required for the proper result of the instruction. Allowing the immediate to have its own syllable, or template, would have made it easier for the decoder to recognize the immediate value and would have reduced the time required for decoding. Therefore, one of ordinary skill in the art at the time of

the invention would have included this extra information in an immediate template to reduce decoding time and to get the proper results of instruction execution. Therefore this argument is moot.

Allowable Subject Matter

13. Claims 6-17 are allowed.
14. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

16. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tonia L. Meonske whose telephone number is (571) 272-4170.

The examiner can normally be reached on Monday-Friday with first Friday's off.

18. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fritz Fleming can be reached on (571) 272-4145. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

19. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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7/10/2006